



## **Assessing the test-retest reliability of the Lower Limb Function Questionnaire (LLFQ)**

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### **Background**

Psychometrically strong outcome measures are essential tools in research and clinical practice that allow evaluation of impact and lead to better clinical care. However, there is lack of outcome measures for lower limb function of orthotic and prosthetic users that are contextually relevant and appropriate for low and middle income countries. In response, our team developed the Lower Limb Function Questionnaire (LLFQ). This youth-report measure is comprised of 20 walking-based items relating to balance/falls, fatigue, pain, walking on uneven terrain, navigating obstacles, running, vehicle use, device appearance and sound, and overall satisfaction with lower limb function.

### **Aim:**

To evaluate the test-retest reliability of the LLFQ with a population of teens and young adults with gait abnormalities

### **Method:**

Participants were a convenience sample of students with gait abnormalities at a boarding school for children/youth with disabilities in a low-resource setting in Africa. Many used lower limb orthoses, prostheses, and/or assistive devices. The LLFQ was administered in a group classroom setting so that all participants heard the same test instructions. It was administered twice with the second session (re-test) six days later. Each LLFQ item was scored using a 100 mm-visual analogue scale (VAS) with item-specific word anchors at either end. A total summary percentage score was calculated. Intra-class correlation coefficients (ICC) and 95% Confidence Intervals (CIs) were used to evaluate test-retest reliability.

### **Results:**

Forty-four students completed the LLFQ twice (20 males; mean age 16.7 SD2.4). Other demographics were as follows: Disabilities - 15 cerebral palsy, 9 trauma, 4 spina bifida, 1 club foot, 7 congenital abnormality, 8 other; Assistive devices – 13 no device, 14 raised shoe, 4 ankle foot orthoses, 5 knee ankle foot orthoses, 6 above knee and 2 below knee amputations; and 29 had unilateral and 15 bilateral disabilities. LLFQ mean scores were 60.6 (SD 18.1, range 17 to 94) at session 1 and 62.0 (SD 17.2, range 22 to 94) for session 2. Both data sets were normally distributed (D'Agostino-Pearson test,  $P > 0.40$ ). The test-retest ICC was 0.86 with 95% Confidence Intervals of 0.76 to 0.92. All youth were able to complete the LLFQ on their own following the group instructions, and did so within 20 minutes.

### **Discussion & Conclusion**

The LLFQ demonstrated mean scores near the middle of its scale and a normal distribution showing that it was able to effectively capture the broad spectrum of functional gait abilities in the study sample. The ICC of 0.86 and lower 95% confidence interval of 0.76 demonstrated that the LLFQ had strong reliability in this sample. Validity testing and comparative evaluations of the LLFQ with a grade level based VAS (F to A+) are underway.